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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to data processing system generally, and relates to amelioration of the data manipulation in data processing system especially. Furthermore, this invention relates to a detail at amelioration of multi-dimension scrolling of the indicative data in data processing system.
[0002]
[Description of the Prior Art] Actuation of the data in data processing system is common knowledge with the conventional technique. In the newest data processing system including a data access, data coding, data communication, a data compression, data conversion, a data entry, the data exchange, data filing, a data link, a data locking, data manipulation, data mapping, data modeling, data processing, data logging, data reduction, and data transfer, data can be operated by many approaches. About magnitude and complexity, a lot of data with the available user of the newest data processing system cannot resist easily, and become in many cases.
[0003] As a result of the complexity of data processing system increasing, to simplify an interface with a lot of data which exist in the newest data processing system with a user has been tried. An example of the attempt for simplifying the interface of a user and data processing system is a thing of a user and data processing system for which an intuitive and graphical interface is performed using the so-called graphical user interface (GUI). A common (common) user access (CUA) user interface is an example of such a graphical user interface. Common user access is the trademark of IBM. A lot of [graphically] data by the intuitive approach are composed using a common user access (CUA) user interface, and it is shown to a user in many cases.
[0004] 1 technique for presentation of the object to a user and the list of setting selections with which two or more objects are made selectable is using the so-called "the list box (List Box)." It is used by the list box in order to display a setup, selection, or the list of objects generally, and the number of selection or objects may change in this case. Generally, a list box is alphabet order, numerical order, entry sequence order, or the order that had semantics to users, such as another order, and displays a setup, selection, or an object. For example, a modem baud rate is displayed by numerical order in many cases. Generally, such a list box is sufficiently big, although six pieces or two or more eight selections are displayed, and such a box has a perpendicular direction or a horizontal scroll bar in many cases, when data are too large and it cannot carry out visible [of them] completely in a list box.
[0005] A scroll bar is the user interface component of the common knowledge matched [that more information is available and it can add in the specific direction about data, and] with the field which can scroll the display for directing to a user. Also being able to scroll so that additional data can be seen using a scroll bar, generally a scroll bar has a scroll box, a shaft, and a scroll button.
[0006] By advance of another computer technology which is recently comparatively, a user can access and display the data from one [at least] computer application program of various relation and not being related on coincidence, and can operate them further. Generally this process is called "multi--tasking." In a true multi--tasking system, some application programs work to coincidence. Each display of these applications can also be offered in a 2-dimensional display system by showing multilayer overlap data collection by the false three-dimensions approach within data processing system. These layers may present the data matched with specific data collection, respectively, generally these layers may be overlapped, and masking of the data in it may be carried out partially or completely mutually. However, there is a problem of a specific proper in many of such multi--tasking systems. In order to reach the data which a user is going to operate, in many cases, within each program, users differed and, sometimes, have to follow about each application program in each level of data types, such as a file whose user is going to access the complicated procedure, a page, or WORD (word). Consequently, a user faces loss of time amount with the number of keystrokes required to only obtain the vision image of the specific data collection of such an overlap false three-dimensions display.

[0007] For this reason, while this contractor of a data-processing technical field enables the display of the simple list of an object, a setup, or selection, or an overlap window with a graphical user interface The class of displayable data within the list in which such scrolling is possible generally In being limited to the simple column of possible selection or an object, and the much more complicated data collection which can be displayed in a window He will understand that data are limited to a technique required to access visually being complicated and wasting time amount in many cases.

[0008] Therefore, it is clear that existence of the approach of enabling multi-dimension scrolling of indicative-data collection within data processing system and a system is required.

[0009]

[Problem(s) to be Solved by the Invention] Therefore, the purpose of this invention is offering advanced data processing system.

[0010] Another purpose of this invention is offering the amelioration approach of data manipulation and amelioration system in data processing system.

[0011] Still more nearly another purpose of this invention is offering the amelioration approach of multi-dimension scrolling of an indicative data and amelioration system in data processing system.

[0012]

[Means for Solving the Problem] The above-mentioned purpose is described below, makes and is attained. The approach and system of this invention can perform multi-dimension scrolling of the overlap data collection displayed by the multilayer or the false three-dimensions approach in data processing system. Migration and the selectable control icon of a scroll box etc. are displayed on the interior of the scroll bar of a display processing system corresponding to the display of a part of selected data collection. A part of displayed selected data collection can also be scrolled to a perpendicular direction or a horizontal direction by moving a control icon or specifying the new location in a scroll bar, using graphic form positioning devices, such as a mouse, by the so-called "drag-and-drop" technique. The display of a part of alternative data collection can answer the selection and actuation of the depth of a scroll box by the user, and can also be prepared, and the physical appearance of a scroll box is changed so that graphic directions of the relative display position inside the multilayer data collection displayed in this way may be performed.

[0013]

[Example] Reference of a drawing, especially drawing 1 shows the computer system 10 used in order to perform the approach and system of this invention in pictorial map. As for a computer system 10, like illustration, it is desirable to have the processor 12 which is the well-known approach and is connected to the keyboard 14 and the display device 16 with the technique concerned. A display device 16 has a display screen 18 preferably. It will be understood by this contractor that a computer system 10 can perform using the workstation combined with a mainframe computer, a minicomputer and the suitable computer containing the so-called "personal computer", or a mainframe host computer. An example of the computer system used in order to perform the approach and system of this invention is International Business Machines Corporation PS/2 or RS/6000.

[0014] In drawing 2 , the approach of this invention and the display of a part of data collection operated according to a system are displayed in pictorial map. Like illustration, a window 30 is equipped with the display field 36, and a part of data collection can also be displayed using this. Furthermore, the data collection drawn here may have text data, graphic data, image data, or those combination as illustration. Generally, like such a display window, in order to show the title which can be used in order that a user may specify specific data collection, a title bar 32 is used. Furthermore, a menu bar 34 is offered. selection of the specific key by which the engineer well versed in a graphical user interface is matched with the command with which the command in a menu bar 34 was chosen, using a mouse pointer 46 -- being visual (graphical) -- he understands that it can choose -- I will come out. Generally, by choosing the specific command in a menu bar 34, the so-called "drop down" command list is used in order to display the command according to individual under the specific general-purpose command chosen by the user.

[0015] Like the data collection display system of the type generally shown in drawing 2 , a window 30

has the vertical scroll bar 38 matched. A vertical scroll bar 38 is used in order to scroll presentation of the data in the display field 36 perpendicularly using one of the approaches of the technical common knowledge concerned. For example, scroll buttons 40 and 42 can be visually chosen using a mouse pointer 46, and the display of the upper part of the data collection by which the present image formation is carried out in the display field 36, or the lower part can also be performed.

[0016] Current and the multi-dimension scroll box 44 are in a vertical scroll bar 38. In the approach explained in full detail here, the multi-dimension scroll box 44 has relation in order to scroll a part of data collection displayed in the display field 36 in the perpendicular mode, or it can also be used in order to choose the layer from which the data collection in the multiplex layer shown by the false three-dimensions approach differs.

[0017] The window drawn by drawing 2 has the level scroll bar 48 like illustration again, and this level scroll bar has scroll buttons 50 and 52 and a scroll box 54, as the vertical scroll bar 38 was described. The part of the data collection seen in the display field 36 can also be horizontally scrolled using the level scroll bar 48 by operating a scroll box 54 visually by the so-called "drag-and-drop" approach, or choosing a scroll button 50 or one side of 52, specifying the point in the level scroll bar 48 using a mouse pointer 46, and making the point rearrange a scroll box 54 so that I may be understood by this contractor.

[0018] If drawing 2 is referred to, it will also be understood by this contractor that the scrolling technique expressed here can be used in order to make it possible to carry out image formation of the various fields in the data collection displayed in the display field 36 a perpendicular direction or by scrolling horizontally in the display field 36 in the display field 36 by the approach of the technical common knowledge concerned. However, by using the multi-dimension scroll box 44 by the approach explained in full detail below, there is relation or another layer in the multiplex layer of the data collection displayed by the false three-dimensions approach can also be chosen. Furthermore, instead of using both a perpendicular and a level scroll bar, the multi-dimension scroll bar of a piece can be used and, in addition to "Z-axis" scrolling which is mentioned later, an image can also be scrolled in a perpendicular direction and horizontal both directions. This can be carried out by offering the scroll bar which has a dimension (dimension) to a horizontal direction and a perpendicular direction.

[0019] The pictorial map-display which expressed the approach of this invention and actuation of multilayer data in which the system was used to drawing 3 and drawing 4 is seen. As shown in drawing 3 , the display field 36 contains the spreadsheet data of the month-long summary of the moon in January. As mentioned above about drawing 2 , the display field 36 is equipped with the vertical scroll bar 38 matched. By using a vertical scroll bar 38, presentation of the data in the display field 36 can also be perpendicularly scrolled using one of the approaches of the technical common knowledge concerned. For example, scroll buttons 40 and 42 can be chosen visually and the display of the upper part of the data collection by which image formation is carried out in the present display field 36, or the lower part can also be performed using a mouse pointer 46.

[0020] As mentioned above, current and the multi-dimension scroll box 44 are in a vertical scroll bar 38. By using the multi-dimension scroll box 44 by the approach explained in full detail here, a part of indicative-data collection in the display field 36 can be scrolled in the perpendicular mode, or the layer from which the data collection in the multilayer shown in the display field 36 differs can also be chosen.

[0021] For this reason, another layer in the multilayer of data collection has been chosen by operating the multi-dimension scroll box 44 so that it may be illustrated by drawing 4 . By choosing the multi-dimension scroll box 44, the display in the display field 36 was corrected and another month-long summary of the spreadsheet data contained in it has been displayed. If the above is referred to, it will be understood by this contractor by using the multi-dimension scroll box 44 that a user changes the display in the display field 36 quickly and effectively, and multilayer one of the displays of the month-long summary generally matched with spreadsheet data by approach which is drawn by drawing 3 and drawing 4 can be drawn.

[0022] The illustration-display which draws the approach of this invention and actuation of three-

dimensions data in which the system was used is looked at by drawing 5 thru/or drawing 7 . The same graphic form image as what was obtained using the computerization shaft-orientations tomography (tomography) (CAT) scan is shown by the example shown in drawing 5 thru/or drawing 7 . By operating the multi-dimension scroll box 44 according to the approach and system of this invention, the selected layer in the three-dimensions data plot showing a computerization shaft-orientations tomography (CAT) scan can also be expressed quickly and effectively in the display field 36. By using the multi-dimension scroll box 44, the display in the display field 36 can be changed quickly and effectively, and an illustration-display can also be offered about one of the selected multiplex layers of the data based on the approach by which drawing 3 and drawing 4 were described, or visual and multilayer one of three-dimensions data collection as shown in drawing 5 thru/or drawing 7 by the intuitive approach so that I may be understood by this contractor with reference to the above.

[0023] Reference of drawing 8 looks at the enlarged drawing solution display of the vertical scroll bar 38 with which the appearance of the multi-dimension scroll box 44 was expressed to the detail. The vertical scroll bar 38 is equipped with the scroll buttons 40 and 42 other than the multi-dimension scroll box 44 like illustration. However, if drawing 8 is referred to, the multi-dimension scroll box 44 will be expressed as the false three-dimensions approach, and having the depth queue 56 will be understood by this contractor. Graphic directions of the relative display position in the multilayer of data collection can also be offered by the approach shown here using the depth queue 56.

[0024] In the example in which this invention was illustrated, by choosing the multi-dimension scroll box 44 visually, and using suitable graphic form choice devices, such as a mouse pointer 46, the multi-dimension scroll box 44 may be operated by the "Z-axis" so that there may be relation or another layer in the multilayer of the data collection displayed on a false three-dimensions display may be chosen. If the multi-dimension scroll box 44 is chosen with a mouse pointer 46, the multi-dimension scroll gestalt of this invention can also call the right carbon button of a mouse 20 (refer to drawing 1) by moving a mouse 20 by the so-called "drag-and-drop" approach push and after that.

[0025] The relative position of the multi-dimension scroll box 44 to the depth queue 56 can also be changed simply and effectively by choosing the multi-dimension scroll box 44 visually, and making push and a mouse 20 operate a right mouse button physically. Generation of the display which is made to limit the appearance visible depth of the multi-dimension scroll box 44 to the maximum value, and naturally cannot treat it easily can also be prevented.

[0026] The enlarged drawing of another example of the multi-dimension scroll box 44 is shown in drawing 9 . Like illustration, the multi-dimension scroll box 44 is a simple rectangle operated as mentioned above to the depth queue 56. That is, the relative position of the multi-dimension scroll box 44 to the depth queue 56 can also be made to change using graphic form selection of the multi-dimension scroll box 44 connected with migration of a mouse 20 (refer to drawing 1).

[0027] 2nd another example of the multi-dimension scroll box 44 is shown in drawing 10 and drawing 11 . The vertical scroll bar 38 is equipped with the scrolling cylinder 58 in the scroll box 44 as shown here. By choosing the scrolling cylinder 58 visually and operating a mouse 20 (referring to drawing 1) using a right mouse button, the relative dimension of the scrolling cylinder 58 can also be changed, as the reference mark 60 of drawing 11 shows. Thus, the multilayer of data collection or the relative depth in a false three-dimensions display can also be intuitively displayed by changing the perspective view of the scrolling cylinder 58 as mentioned above.

[0028] Although three different examples of the multi-dimension scroll box 44 are shown in drawing 8 , drawing 9 , drawing 10 , and drawing 11 , it will also be understood by this contractor that other techniques can be used. Graphic directions of the relative display location in the multiplex layer of data collection as shown in drawing 8 thru/or drawing 11 can also be performed using this exterior physical change that a change of an intuitive exterior physical [only] to a well-known scroll box in order to offer a graphical user interface which there is relation or enables quick and effective migration between the multilayers of the data collection displayed into it must be added.

[0029] Finally, the high-level logic flow chart showing the approach and system of this invention is shown in drawing 12 . Like illustration, it starts from block 70 and a process progresses to block 72 after

that. In block 72, it judges whether the depression of a mouse button was detected. If not detected, a process will only be repeated until a mouse button depression is detected. Detection of the depression of a mouse button advances a process to block 74, as shown in block 72. In block 74, it judges whether a mouse pointer is in a scroll bar. If denied, a process will only progress to block 76 and will resume routine processing.

[0030] However, when the depression of a mouse button is detected and a mouse pointer is in a scroll bar, a process progresses to block 78. Decision which mouse button was pressed is made in block 78. It will be understood by this contractor that a common mouse has a left mouse button and a right mouse button. If a left mouse button is pushed, a process will progress to block 80 and standard "drag and drop" operation mentioned later will be performed after that.

[0031] "Drag-and-drop" operation starts by moving the scroll box matched with the scroll bar according to migration of a mouse, as shown by block 80. Then, a process progresses to block 82, redraws a part for the display of the data collection by which image formation is carried out into a display field, answers migration of a scroll box, and displays the field of an addition of data collection. Next, a process progresses to block 84. Decision whether the mouse button was canceled is made in block 84. When not canceled, a process returns to block 80 and is repeated. If a mouse button is canceled, a process will be progressed and ended to block 86.

[0032] Again, it returns to block 78 and the important description of this invention is shown. A push on a right mouse button advances a process to block 88. In block 88, modification of the appearance of a scroll box is made according to migration of a mouse. If the appearance from which the scroll box changed when this referred to drawing 3 thru/or drawing 9 shows the user of the relative position in the multiplex layer of the data collection of a false three-dimensions display an intuitive display, it will be understood by this contractor that it can carry out using the technique in which many differ. A process progresses to block 90, after changing the appearance of a scroll box according to migration of a mouse, as shown by block 88. The display for expressing a different display layer with block 90 is redrawn, and a process progresses to block 92 further. In block 92, if decision whether the mouse button was canceled is made and it is not canceled, a process returns to block 88, is repeated, by the above-mentioned approach, continues the multilayer of data collection and scrolls. When a mouse button is canceled, a process progresses to 86 and returns.

[0033] If the above is referred to, it will be understood by this contractor that this applicant offers the newest approach used for multi-dimension scrolling of the indicative-data collection displayed by the multilayer or the false three-dimensions approach and the system. With a means to perform modification of the physical appearance of the known scroll box which performs graphic directions of the relative display location in the multilayer of data collection, a lot of data can also be operated simply and effectively through the data displayed by the multilayer of a horizontal direction and not only a perpendicular direction but data collection, or the false three-dimensions approach.

[0034]
[Effect of the Invention] Since this invention is constituted as mentioned above, multi-dimension scrolling of the overlap data collection displayed by the multilayer or the false three-dimensions approach in data processing system can be performed.

[Translation done.]

CLAIMS

[Claim(s)]
[Claim 1] The process which is the approach of operating alternatively the display of two or more overlap data collection displayed on a multilayer within data processing system, and displays migration and a selectable control icon within said data processing system, The process which changes the display of one part on which said migration and migration of a selectable control icon were answered, and it was chosen in said two or more overlap data collection, The process which answers said migration, and selection and actuation of a selectable control icon, and displays at least one another part in said multilayer overlap data collection, The process which answers said migration, and selection and actuation of a selectable control icon, and changes the exterior gestalt of said migration and a selectable control icon, Alternative operating instructions of the display of data collection on which it **** and graphic directions of a display location are offered in said multilayer overlap data collection.
[Claim 2] Said processes which display migration and a selectable control icon in said data processing system are the alternative operating instructions of the display of the data collection according to claim 1 which has the process which displays at least one scroll bar matched with the display of two or more of said overlap data collection.
[Claim 3] Said processes which answer said migration, and selection and actuation of a selectable control icon, and change the exterior gestalt of said migration and a selectable control icon are the alternative operating instructions of the display of the data collection according to claim 1 which has changing the display of said migration and a selectable control icon to a visible depth queue.
[Claim 4] Said processes which answer said migration, and selection and actuation of a selectable control icon, and change the exterior gestalt of said migration and a selectable control icon are the alternative operating instructions of the display of the data collection according to claim 1 which has the process which changes the size of said migration and a selectable control icon.
[Claim 5] It is the data processing system for operating alternatively the display of two or more overlap data collection displayed on a multilayer within data processing system. The means for displaying migration and a selectable control icon in said data processing system, The means for changing the display of one part on which said migration and migration of a selectable control icon were answered, and said two or more overlap data collection was chosen, The means for displaying at least one part which answers selection and actuation of said migration and a selectable control icon and which changed of said multilayer overlap data collection, The means for answering said migration, and selection and actuation of a selectable control icon, and changing the exterior gestalt of said migration and a selectable control icon, Data processing system with which it **** and graphic directions of a display location are offered within said multilayer of overlap data collection.
[Claim 6] Said migration and a selectable control icon are data processing system according to claim 5 which has a scroll bar.
[Claim 7] Said means for answering said migration, and selection and actuation of a selectable control icon, and changing the exterior gestalt of said migration and a selectable control icon is data processing system according to claim 5 which has a means for changing the display of said migration and a selectable control icon to a visible depth queue.
[Claim 8] Said means for answering said migration, and selection and actuation of a selectable control icon, and changing the exterior gestalt of said migration and a selectable control icon is data processing system according to claim 5 which it has in the means for answering said migration, and selection and actuation of a selectable control icon, and changing the size of the display of said migration and a selectable control icon.

[Translation done.]